DOCUMENT RESUME

ED 248 839 IR 011 288

AUTHOR D'Alessio, Dave; And Others
TITLE The Videogame and the College Student.
PUB DATE May 84
NOTE 20p.; Paper presented at the Annual Meeting of the International Communication Association (San Francisco, CA, May 24-28, 1984). Light and broken type may limit legibility.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; Cerebral Dominance; College Students; *Games; *Leisure Time; *Mass Media Effects; Media Research; *Sex Differences; *Social Influences; Video Equipment
IDENTIFIERS *Video Games

ABSTRACT

College students' activities and personality characteristics associated with video game use were studied using existing theories about the effects of television as a framework. A three-part questionnare was given to 275 students enrolled in introductory communication classes at a large, midwestern university to gather data on: (1) the psychological characteristics of anomie (a feeling of helplessness about the world), introversion, right and left brain properties, altruism, and "mean world" or perception of the world as a malevolent place (chosen because the economic nature of video games ensures that players must lose and that most game environments must be malevolent); (2) participation in a variety of non-scholastic activities; and (3) gender, ethnicity, family income, grade point average, age, class standing, and employment status. Correlation patterns across sexes were very different, indicating that video games serve different functions for males and females. For example, females demonstrated more sharing behavior and showed no cultivation or information processing effects. For males, however, a variety of potential negative impacts exist, including cultivation effects, feelings of anomie, and that the world is a mean place. Nineteen references are listed. (LMM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED248839

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

The Videogame and the College Student

Dave D'Alessio

Irving Plonskier

Elizabeth Stoller

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

David W. D'Alessio

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Mr. D'Alessio (MS, Rensselaer Polytechnic Institute, 1980) is a Doctoral Student in Communication at Michigan State University, where Mr. Plonskier and Ms. Stoller are undergraduates in the Department of Advertising. This project was done with the support of the Communication Technology Laboratory in the School of Communication Arts and Sciences at MSU.

IR011288

BEST COPY AVAILABLE

The Videogame and the College Student

"There are educational videogames, but the kind the kids like and the kind they are addicted to are Martians coming in that have to be killed...everything is eliminate, kill, destroy..."[1] The Surgeon General, C. Everett Koop, made this statement about videogames without scientific evidence, and admitted thereafter that it had been an opinion. Yet this is not an unrepresentative statement. Many adults do not like videogames, although there is little or no hard evidence one way or another about their effects, if any, on users. The purpose of this study was to begin to outline directions for future research to follow.

Videogames are all descendants of a simple game called "Pong.", which resembled tennis in the sense that players attempted to prevent a "ball" from travelling past them, but which was played on a TV screen using electronic images rather than physical equipment. Pong enjoyed a brief popularity, but its limitations caused it to fade in popularity rather rapidly.

Pong was followed, however, by a series of newer and more complex games (such as Space Invaders and Asteroids) which offered almost infinite variety, and videogames rapidly became a billion dollar industry.[2] The widespread use of these games in turn led to the widespread outcry: opponents of the games claimed that they are addicting, that they can cause physical damage to the player, and that they take time away from more worthwhile pursuits such as reading, playing outdoors, doing homework, or talking to friends; proponents argued that the games are relaxing, do not cause any serious harm, and in fact foster a form of "computer literacy" that would stand a child good stead in the coming "Information Age".[3]

BEST COPY AVAILABLE

Research Findings

Despite the uproar, most of these conclusions were based on argumentation, idiosyncratic observation, or simply opinion. Very little has actually been done in the direction of determining whether these effects, or if any effects, do occur.

The empirical studies of the phenomenon seem to be oriented toward the nature of the videogame environment rather than the games themselves. Several have found that male players seriously outnumber female ones;[4] Fridgen and Taber also found that players tend to go to arcades in groups, and that players tend to be under 22 years in age.[5] Koch further found that social interactions around the games are structured in turn by the game: most conversation occurs at lulls in the play, for instance. Examination of her data also indicates that much of the conversation around a videogame concerns the game, and included such things as congratulations on good play and help in determining maneuvers to use against the machine.[6]

Theoretical Perspectives

Because of the relative recency of the importance of the videogame phenomenon, theories on the effects of the games have yet to be developed. However, several well known theories about the effects of television on viewers are readily applicable by extension to videogames as well, and their predictions will serve to guide a preliminary examination of the phenomenon. The first would be the "Cultivation Hypothesis", which holds that the media directly impact on people's perceptions of what sorts of people/activities are prevalent in the world: as the media portray acts as common, so people will think these acts common. This is most often applied to crime and violence on television--since crime and violence are relatively common on TV, people think that they are common in real life. Additionally, these beliefs in turn act

on a person's emotional state: as people think that crime and violence are prevalent in the world, so too they will think that it is more likely that they will be a victim of crime or violence, and to think that the world is a "mean" place.[7]

This theory is readily applicable to videogames along at least two dimensions. While the content analysis of videogames has yet to be performed, the economic nature of the phenomenon ensures that most games have two points in common. First, it is a virtual necessity that the player lose the game: if it were possible to win, in theory a player could play forever, thus reducing the income from that game to almost zero. Second, in order to ensure that the player does lose, it is virtually required that most of the elements of the environment be malevolent: videogame players have few allies and many enemies within the structure of the game.

These two notions, taken from a cultivation perspective, would lead to at least two expectations about heavy videogame users. Because of the fact that the entire "pseudouniverse" is inevitably bound to the destruction of the player (or at least the player's surrogate within the game), it seems reasonable that they heavy player will come to think of the world as a "mean" place (as above). Also, because the most complex gyrations and machinations of the players lead inevitably to the same end (the death or destruction of the player surrogate), it seems reasonable that the heavy player may start to develop a sense of anomie, or helplessness about the world.[8]

Another theoretical position that lends itself to application to videogames is the "The Medium is the Message" concept proposed and explicated by McLuhan. McLuhan claimed that the electronic media had the ability to change the way in which people process information, from the linear, sequential method inspired by writing and verbal communication, to a holistic manner of grasping information based on the pictures of the television screen.[9]

This he later tied to the relative status of the hemispheres of the brain: linear processing leading to the dominance of the left, linearly-oriented hemisphere and holistic processing to the dominance of the right, holistic-oriented hemisphere.[10] Thus, the requirements of reading and the use of linearly oriented language led in turn to the existing dominance of the left hemisphere; but the prevalence of holistic images in the electronic media in turn will lead to the dominance of the right hemisphere. D'Alessio has since argued that this is only possible in media which permit intervention by the user into the visual image presented (based on an analogy to language learning); but, while television might not be sufficient to create such an alteration, videogames are.[11] This leads in turn to the expectation that heavy videogame users are better at right brain skills and worse at left brain skills.

The research evidence thus far presented might permit one to speculate about other effects. Both Fridgen and Taber and Koch made note of the fact that videogame use is a social, not an individual, phenomenon. Fridgen and Taber found that people attend to games with friends, as a sort of social occasion;[12] Koch found that the games do not prevent interpersonal communication, and her data suggests that people give each other help in dealing with the machine.[13]

These findings imply that many social psychological factors might be related to videogame use: two that are clearly implied by the above findings are introversion and altruism. Because videogames are used in social situations by people who tend to congregate around them,[14] it seems reasonable to expect that the more introverted person, the person afraid of people, will tend to avoid these situations and thus videogames--leading to a negative relationship between introversion and videogame use. Similarly, the finding that people help each other around games leads clearly to the expectation that altruistic

BEST COPY AVAILABLE

behavior relates to their use: this relationship would be driven by what is termed the "norm of reciprocity". As Person A helps Person B while B is playing, Person B becomes socially obligated to return the favor.[15]

Another area where social psychological differences may come into play is in sex differences. Obviously, based on the findings already reported, males find some gratification from playing videogames that females do not (or females find some sanction that males do not). Therefore, any study of videogame use must have the expectation that males will play more; further, because there seems to be such a difference in the factors involved in use, such a study would have the expectation that the effects of play, if any, would be different as well. Examination of the effects of television indicate that the process within males and females differs (for instance, Watt and Krull indicate that the viewing of violent TV content has an arousing effect on girls and a facilitating effect on boys),[16] which may be an indication that an analogous medium could have the same functional difference.

Finally, apart from the personality factors discussed above, it seems reasonable to examine the place of videogames in the spectrum of leisure-time activities: what other activities or demographic characteristics are associated with the use of videogames? For instance, is the videogame a television analog or television surrogate, or is it simply a game? Are important activities such as studying replaced by videogame use, or are the two unrelated?

These were the research questions that guided this crossectional survey of college students. There would be an attempt to see what sorts of activities and characteristics correlated with videogame use; and there would be an attempt to gather correlational data on the personality questions posed above in order to guide further, experimental work into the potential effects of videogames, if any.

BEST COPY AVAILABLE

Method

A three part questionnaire was developed. The first part consisted of 27 Likert items designed to measure the six psychological characteristics discussed above: standard scale items measuring anomie, the mean world index,[17] and introversion[18] were used together with items designed to attempt to measure right and left brain properties and altruism.

The second part of the questionnaire asked respondents to estimate their participation in a variety of non-scholastic activities, including four measure of videogame use. These four measures were estimates of how many hours in a week each person played, how much money in a week they spent on videogames, whether they had a favorite videogame, and how many points they typically scored on their favorite machine. These measures actually represent a hierarchy of involvement: having a favorite game requires the least involvement since it requires only watching, not playing; time and money spent represent roughly equal involvement, with money being a somewhat finer measure in resolution (it takes a poor player several quarters to play for half an hour, the smallest coded amount of time); while knowing what score one typically achieves generally requires a modicum of ego-involvement in the result of the game.

Also among the activities section were measures of the use of various media including the reading of non-school books and studying, and the measurement of other social activities such as the number of clubs belong to, and the amount of time spent engaged in sporting events.

The final section of the questionnaire was a short demographic section that asked for gender, ethnicity, family income, grade point average, age, class standing, and whether or not the student had a job.

Two hundred and seventy five students enrolled in introductory communication classes at a large midwestern university completed the survey. Because

these communication classes are required or recommended by many of the departments of the university, the respondents covered a broad cross-section of the student community. The data were analyzed using SPSS.

Results

Of the 275 students completing the questionnaire, 105 were male and 164 (61%) were female (six students did not complete that item). This represents roughly the distribution of females to males among all students at that university. Eighty nine percent were Caucasian, and the predominant minority group was Black-Americans, who made up 8% of the sample. Ages ranged from 18 to 39, although only 6% of the sample was over 23; the mean was 20 years and three months.

Table 1 about here

As expected, t-tests between sexes on all four of the videogame use measures indicated that play was predominantly engaged in by males (see Table 1). Less than half the females had even watched enough games to have developed a favorite. Males reported spending about three quarters during a week, the average female less than one; the average male played approximately 40 minutes in a week, while the average female played about ten.

Table 2 about here

In order to parsimoniously illustrate the relationships between videogame use and participation in other activities (and also demographic variables), a scale was created by adding z-scores for the four videogame use measures to yield one, overall measure of use. The reliability of this measure (Cronbach's

alpha) was .66 (intercorrelations between items are presented in Table 2). Correlations between this measure and the activities and demographics were calculated for the entire set, and also individually for each gender (see Table 3).

Table 3 about here

First of all, several of the correlations which exist for the group as a whole diminish in size as well as becoming insignificant when the sexes are separated, specifically the correlations between videogame use and money spent on movies, team sports, and ethnic group. The interpretation of this is probably that these are simply things that males do more than females a priori (or in the case of ethnic group, that males are more predominant among the minority group students than among whites), which creates a spurious relationship in the overall correlations because males also play more videogames.

Of more interest is the pattern of correlations across the sexes. Videogame use is positively related to individual sports and TV use for males, as well as negatively related to age and (more importantly) class year: this suggests that to the male the videogame is something of an individual activity (freshmen having had less time to develop friendship networks). With female students, however, only two of the activities seem to be related at all--videogame use is positively related to time spent studying (which clearly contradicts the expectations of opponents of the games), and negatively related to participation in team sports. It should be noted that seven significant correlations were found among the thirty-two tests; two would be expected by chance.

As expected, the patterns of correlations across sexes are very different, leading to the conclusion that videogames do serve different functions for males and females.

BEST COPY AVAILABLE

Table 4 about here

For analysis of the personality items, the four videogame measures were separated in order to help clarify the relationships between the personality measure and videogame use. Before analysis, reliabilities (Cronbach's alpha) for each of the personality measures were calculated, and unreliable items removed. Despite this, the measure of right brain skills remained grossly unreliable (Krugman has commented on the futility of using left brain oriented measures, such as questionnaire items requiring verbal responses, of right brain skills),[19] and thus it was necessary to omit that scale from the analysis (see Table 4).

Again, examination of the correlation matrices clearly shows the differences in relationships between males and females. Only two significant correlations appear for females (where one would be expected by chance alone), and both of these occur on the personality measure that is the only one not related to videogame use in males!

For males, two of the eight correlations predicted by cultivation occur: anomie and the mean world index are both correlated with the amount of money spent on the games. In a preliminary study such as this one, this must be interpreted as evidence of the possibility of cultivation effects.

For the correlations predicted by McLuhan (and D'Alessio), only one of the four is significant, and it is significant in the direction opposite that predicted (the relation between money spent and left brain skills). This must be taken as a lack of support, although the right brain skills scale would have provided a more appropriate test.

BEST COPY AVAILABLE

Finally, two of the eight correlations predicted by social psychological factors emerged, both supporting the notion that videogame use is, for whatever reason, more prevalent among more extroverted persons. No relationship between videogame use and altruism was found for males.

On the other hand, the only relationships between videogame use and personality factors found for females was between time spent and point scoring and altruism: heavy female players were more altruistic. The only other relationship which even approached significance was also for altruism: for females, the expectations of cultivation and holistic orientation were clearly unfounded.

Discussion

Possibly the most important finding is the difference in usage between males and females. It would seem that females find videogame arcades to be locations appropriate for sharing behaviors: it would seem that women do more "ganging up" against the machine than males do. Cultivation effects do not seem likely among females, and neither do effects on their manner of processing information. For females the only activity "displaced" by videogames is team sports--although it could easily be that the reverse is true, and that women who are disinterested in team sports play more games. For female college students, the fears of critics do not seem true: videogame use is not related to the grades of the students, and in fact there is a positive relationship between playing games and the amount of studying they do!

For males, on the other hand, a variety of potential negative impacts exist, although it is important to note that these are correlations, and not indications of causal relationships. The possibility of cultivation effects, for instance, exists: playing many videogames is associated with feelings of anomie and that the world is a "mean" place. On the other hand, there is also an association between videogame use and being extroverted. Whether these associations are causes or effects of play remains to be determined experimentally.

McLuhan's contention that left brain skills subordinate themselves to right brain skills as a result of exposure to electronic media (even those in which intervention in the image is possible) does not seem to have been supported by this study for either males or females. There does remain a positive correlation between left brain skills and money spent, which may imply that left brain skills may have no effect on desire to play the games, but may prevent the player from doing well!

Again, for males videogames do not appear to displace any more "useful" activities. Playing games is not negatively related to any activity (including studying), and is positively related to watching television and playing individual sports, suggesting that male players may regard videogame play as more of an individual recreational activity than it is by females. The predominance of younger players may be an indication of any of several social factors.

Most important to the critic of the videogame is the strong negative relationship between videogame use and grade point average among males. The pattern of other correlations, however, seems to suggest that this relationship is not a causal one: heavy players spend as much time studying as light players, and videogames do not seem to be causing the degradation of left brain abilities that could also be the causal agent in this relationship.

As has been mentioned several times, this study represents an attempt to derive some structure for an experimental program of research into the effects of videogames, and certain plans of study have already been laid out. Additionally, the limitations of this study require that further extension of this work take place in other areas as well. First and most important would be the extension of a study such as this one to a younger, probably high school and junior high school age, population. These students not only represent a fairly large proportion of videogame users, but, being young, also represent a more

susceptible population as well. Additionally, high school students are a more heterogenous population.

Second, in order to provide a more thorough test of McLuhan's proposition, a reasonable scale for the measurement of right brain skills needs to be developed and administered. Such a scale would probably consist of some sort of set of physical/spatial problem solving questions, and not a set of Likert items.

Third, there is a need for further examination of the social setting of the videogame in order to help establish the reasons for the sex differences in the social place and potential effects of the games. Clearly, [illegible] this study indicate that videogames fill very different, almost opposing, needs and roles between college age men and women.

Fourth, there is a need for a more precise examination of the games and their effects. Some games are strictly two dimensional and some simulate three dimensions. Some are totally abstract while some are highly anthropomorphic. While these games have yet to reach arcades, there are games for home computers/arcades which require cooperation between the player(s) and the game environment, while most game environments are hostile. Games are being created which achieve almost unbelievable resolution through the use of laser disc technology, while many games retain the computer-terminal-like resolution of old. What differences will these make to their users? Will they moderate or mediate effects? Will the newest games create an entire new set of effects?

Finally, it is important that theoretical perspectives which can guide these researches be developed or adapted to apply to videogame use. The raw amount of time people spend with videogames virtually requires that the questions posed above be considered, a task which virtually requires the application of a theoretical perspective in order to guide thought and encourage explanation.

BEST COPY AVAILABLE

Footnotes

[1]Detroit Free Press, November 10, 1982.

[2]Skow, J. "Games that Play People." Time, January 19, 1982.

[3]Alperowitz, C. "Video Games: What's the Score?" React, 12(1), 1983. Tommervik, M. C. "The Art and Craft of the Game." Softtalk, 3(July), 1983.

[4]Trinkaus, J. W. "Arcade Video Games: An Informal Look." Psychological Reports, 52, 1983.

[5]Fridgen, J. D., and Taber, M. "Leisure, Electronic Games, and 'Flow'." Paper presented at Recreation Research Symposium, National Parks and Recreation Association, Louisville, KY, 1982.

[6]Koch, S. "Videogame Talk." Paper presented at Conference on Discourse Analysis, East Lansing, MI, 1982.

[7]Gerbner, G., and Gross, L. "Living with Television: The Violence Profile." Journal of Communication, 26(2), 1976.

[8]Brock, L. "Social Integration and Certain Corollaries: An Exploratory Study." American Sociological Review, 21, 1956.

[9]McLuhan, M. Understanding Media: The Extensions of Man, New York: Signet, 1964. McLuhan, M., and Fiore, Q. The Medium is the Message, New York: Bantam, 1967.

[10]McLuhan, M. "The Brain and the Media: The 'Western' Hemisphere." Journal of Communication, 28(4), 1978.

[11]D'Alessio, D. W. "Meet Me Down at Pinball Petas: McLuhan's Paradigm and Emerging Media." Paper presented at the Annual Meeting of the International Communication Association, Boston, MA, 1982.

[12]Fridgen and Taber, Op Cit.

[13]Koch, Op Cit.

BEST COPY AVAILABLE

[14]Panelas, T. "Adolescents and Video Games." Youth and Society, 15, 1983.

[15]Miller, G. R., and Steinberg, M. Between People, Chicago: SRA Associates, 1975.

[16]Watt, J. H., and Krull, R. "An Examination of Three Models of Television Viewing and Aggression." Human Communication Research, 3(2), 1977.

[17]Gerbner, G., Gross, L., Morgan, M., and Signorelli, N. "The 'Mainstreaming' of America: Violence Profile #11." Journal of Communication, 30(3), 1980.

[18]Cohen, J. Personality Assessment Eyewitness Series in Psychology #18, Chicago: Rand McNally, 1969.

[19]Krugman, H. E. "Point of View: Sustained Viewing of Television." Journal of Advertising Research, 20(3), 1980.

Table 1

t-tests of Usage Differences Between Genders

Video Game Use	Males	Females	t
Has Favorite	60%	43%	2.71**
Time Spent (in Hours)	.68	.16	3.74***
Money Spent (in Dollars)	.77	21	3.39***
Points Scored (in Thousands)	50.8	6.0	2.16*

*=p<.05
**=p<.01
***=p<.001

Table 2

Correlations Between Videogame Use Measures

	Time Spent	Money Spent	Points Scored
Has Favorite	.333	.379	.184
Time Spent	--	.601	.242
Money Spent	--	--	.193

All correlations significant at p<.001

BEST COPY AVAILABLE

Table 3

Correlates of Videogame Use With Other Activities

Activity	All Persons (N=275)	Males (N=105)	Females (N=164)
TV use	.085	.202*	.013
Number of Movies	.098	.095	.058
Money Spent on Movies	.137*	.084	.006
Non-school Books	.071	.002	-.003
Studying	.077	.040	.152*
Music Use	.092	.142	.051
Team Sports	.173**	.148	-.142*
Individual Sports	.253***	.163*	-.067
Member of Fraternity/Sor.	.087	.098	.067
Number of Clubs	-.003	-.040	.069
Ethnic Group (Low=caucasian)	.146**	.120	.069
Age	-.071	-.170*	-.021
Class Year	-.087	-.200*	-.009
Having a Job (Low=no job)	.020	-.052	.068
Grade Point Average	-.208***	-.242**	-.053
Family Income	-.021	-.028	.031

*=p<.05
**=p<.01
***=p<.001

BEST COPY AVAILABLE

Table 4

Correlates of Videogame Use and Personality Measures

For Males

Video Game Use	Introversion	Anomie	Mean World	Left Brain	Altruism
Has Favorite	-.229**	.089	.121	.107	.002
Time Spent	-.187*	.040	-.112	.010	.050
Money Spent	-.013	.241**	.160*	.157*	.092
Points Scored	.079	.157	.024	.111	-.049

For Femles

Video Game Use	Introversion	Anomie	Mean World	Left Brain	Altruism
Has Favorite	-.068	-.058	.099	.008	.081
Time Spent	-.023	.042	.048	-.039	.137*
Money Spent	-.054	.039	.012	-.034	.122
Points Scored	-.049	.047	.042	.040	.170*

*=p<.05
**=p<.01
***=p<.001

BEST COPY AVAILABLE